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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/626,325	07/24/2003	Steven George Skinner	632-L	1360

7590

03/15/2006

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EXAMINER

LOHN, JOSHUA A

ART UNIT PAPER NUMBER

2114

DATE MAILED: 03/15/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/626,325

Applicant(s)

SKINNER ET AL.

Examiner

Joshua A. Lohn

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2114

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 05 March 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-10 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 24 July 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 7/24/03.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Claim Objections

Claim 3 is objected to because of the following informalities: Claim three is written as depending upon claim 1, however based its composition being a subset of step (d) it appears that it should be dependent upon claim 2. For purpose of examination the examiner will evaluate claim 3 as depending upon claim 2. Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1 and 5-10 are rejected under 35 U.S.C. 102(b) as being anticipated by Microsoft Corporation, Server Clusters: Majority Node Sets (a.k.a. Quorum of Nodes), published June 2002, now referenced as Microsoft.

As per claim 1, Microsoft discloses a system where a cluster of servers constitute a multiplicity of cluster nodes which are all connected to each other to service multiple PC users via a public network comprising: (a) shared storage means virtually providing a disk resource (Quorum) of stored data, said means being seen as a single quorum repository of a Microsoft Cluster Service Program (Microsoft, page 2, section “What is a Majority node set?”); (b) local quorum disk resource means which are positioned in each node of said cluster of servers and which operate as a single quorum (Microsoft, pages 2-3, section “What is a Majority node set?”);

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(c) means to utilize the remaining nodes of the cluster when a node is disconnected or inoperative (Microsoft, page 3, paragraphs 2-4, starting with “This ensures...”).

As per claim 5, Microsoft discloses a cluster system of “M” server nodes operating with an (MSCS) Microsoft Cluster Service program and able to revive and reconstitute a majority node set cluster after a node failure comprising: (a) a majority node set quorum resource servicing said server nodes when a majority of the cluster nodes are operating and are all in communication with each other (Microsoft, page 3, paragraph 4, starting with “In a traditional...”); (b) means to bring back the cluster on-line after a failure causing non-utilization of one or more nodes (Microsoft, page 7, section from “Special care...” through “Note...”).

As per claim 6, Microsoft further discloses the cluster system of claim 5 where said means (b) to bring back the cluster on-line includes: (b1) means to detect whether the system is operating as a majority node set, a shared disk quorum or as a local quorum (Microsoft, page 7, states that the recovery includes restarting the cluster service and booting the nodes that are returning, section from “Special care...” through “Note...”, this startup and boot would inherently include detection of the type of disk set as that is defined as being essential to the setup of the cluster, see page 4, lines 1-2, the types to be detected include majority node set, a shared disk quorum, and a local quorum, where there is no shared disk, see page 4, first full paragraph, where each type is described).

As per claim 7, Microsoft further discloses the system of claim 6 which indicates system operation as a majority node set then further includes: (b1a) means to revive and put back on-line non-functioning server nodes (Microsoft, page 7, section from “Special care...” through

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“Note...”); (b1b) means to reconstitute sufficient server nodes to establish a majority node set cluster (Microsoft, page 7, section from “Special care...” through “Note...”, where the cluster is reconstituted with the recovered nodes, which would reestablish the majority node set because the original configuration is restored to the cluster of nodes).

As per claim 8, Microsoft further discloses the system of claim 7, wherein said means (b1b) to reconstitute includes: (b1ba) establishing an operating cluster where $M/2+1$ is the number of operational server nodes (Microsoft, page 3, where it is disclosed that full functionality of the cluster requires that “($\text{<Number of nodes configured in the cluster>/2} + 1$)” nodes are active to ensure a majority, this would be true of the cluster restored on page 7 due to the fact that the restoration of the nodes brings the cluster back into the fully functioning state it had before, see page 5, “What to do if you Lose Quorum”).

As per claim 9, Microsoft discloses in a cluster system of “M” server nodes operating with an (MSCS) Microsoft Cluster Service Program, a method for reviving and reconstituting a majority node set cluster after a node failure comprising the steps of: (a) executing a detection phase wherein a Cluster Verifier determines the type of clustering mechanism being deployed (Microsoft, page 6, where it states “Once the registry keys are set on all nodes, the cluster service can be started on those nodes”, this operation describes a stage of the reviving and reconstituting of the node set cluster after failure where the type of clustering mechanism would inherently be detected in the starting of the cluster service, which requires that the cluster type be known, see page 3, last line, through page 4, second line); (b) institute a Revival Phase, when the operating cluster nodes fall below $M/2+1$, in order to allow a user to manually restart the cluster

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(Microsoft, page 6, paragraphs 1-3, where a manual process is initiated to allow continued use of a cluster lacking the majority of nodes); (c) instituting a Reconstitution Phase, when the prior non-operating cluster nodes are operational and ready to rejoin said cluster (Microsoft, page 7, section from "Special care..." through "Note...").

As per claim 10, Microsoft further discloses the method of claim 9 wherein step (c) includes the steps of: (c1) terminating said Revival phase (Microsoft, page 7, where it is shown in the step of "stop the cluster service ON ALL of the cluster nodes"); and (c2) reconnecting said newly restored operational nodes back into said cluster (Microsoft, page 7, where it is shown in the step of "Boot the nodes at the primary site").

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 2-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Microsoft, in view of Kumar et al., United States Patent number 6, 789,213, filed January 10, 2000.

As per claim 2, Microsoft discloses continuing operation on those nodes deemed to be up and running (Microsoft, page 3, third full paragraph), and that each node of the system has its own local quorum disk resource (Microsoft, page 2, figure). Microsoft fails to disclose the means to convert said multiplicity of cluster nodes into a single node, and means to trouble shoot said single node to find the cause of its inoperability.

Kumar discloses converting said multiplicity of cluster nodes into a single node, and means to trouble shoot said single node to find the cause of its inoperability (Kumar, col. 8, lines 16-47, where the cluster of nodes is reduced to a single “first node” which is then used to test connectivity to detect if a disjointed sub-cluster has formed, which causes inoperability of the node within the cluster).

It would have been obvious to one skilled in the art at the time of the invention to use the detection of Kumar in the invention of Microsoft.

This would have been obvious because Microsoft discloses a need to determine which nodes remain connected and which are in non-majority partitions (Microsoft, page 3, section from “In the case of...” through “the following sections...”). Kumar discloses a reasonable method of detecting the connections from the perspective of an individual node (Kumar, col. 8, lines 16-47). This detection of Kumar would provide an obvious method to satisfy the desire of Microsoft to detect the structures of any sub-groups.

As per claim 3, Microsoft and Kumar further disclose the system of claim 2 which includes: (dx1) means to sense a network outage which severs said cluster into two partitions (Kumar, col. 8, lines 19-31, where the detection of activation signals will sense a network outage); (dx2) means to enable the remaining group holding the majority of nodes to continue in operable activity (Microsoft, page 3, paragraph starting “In a traditional MSCS cluster...”).

As per claim 4, Microsoft and Kumar further disclose the system of claim 3 which includes: (dx3) means to take off-line the non-majority group of nodes (Microsoft, page 3, paragraph starting “In the case of a failure...”, where all nodes in the non-majority group have all operation terminated).

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure is provided on form PTO-892.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Joshua A. Lohn whose telephone number is (571) 272-3661. The examiner can normally be reached on M-F 8-4.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Scott Baderman can be reached on (571) 272-3644. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

JAL


SCOTT BADERMAN
SUPERVISORY PATENT EXAMINER